

### **REMARKS**

Claims 1, 3-12, 14, 18-19, 21, and 23-30 are now pending in this application. Claims 1, 5, 7, 8, 10-12, 14, 18, 19, 21, 23-30 are independent. Claims 24-30 have been amended, and no claims have been added or canceled by this Amendment.

No new matter is involved with any claim amendment, as support may be found throughout the originally-filed disclosure.

### **Undue Breadth Rejection Under 35 U.S.C. §112, ¶1**

Withdrawal of the rejection of claims 24-30 under 35 U.S.C. §112, first paragraph, as allegedly being of undue breadth as a single means claim is requested. Although Applicants believe that these previously presented claims meet the requirements of the Patent Laws, these claims have been amended solely for clarity so as to facilitate expeditious prosecution of this application to issue.

In particular, these claims have been amended in a manner that is believed to overcome the stated bases for rejection by positively reciting a processor and its various functions that are performed in combination with other elements. Consideration and allowance of amended claims 24-30 are respectfully requested.

### **Indefiniteness Rejection**

Withdrawal of the rejection of claims 24-30 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite, is requested. These claims have been amended in a manner that is believed to overcome the stated bases for rejection. Consideration and allowance of amended claims 24-30 are respectfully requested.

### **Unpatentability Rejection over Chuah in View of Shimojo**

Withdrawal of the rejection of claims 23, 24 and 27 under 35 U.S.C. §103(a) as allegedly being unpatentable over Chuah (US 6,400,695) in view of Shimojo (US 5,787,072) is requested. The Examiner has failed to make a *prima facie* case of unpatentability.

At the outset, Applicant notes that, to establish a *prima facie* case of obviousness, three basic criteria offer useful insights. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations.<sup>1</sup> Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.<sup>2</sup> The Supreme Court recently held that it is necessary, *inter alia*, for a court to look to interrelated teachings of multiple patents in order to determine whether there was an apparent reason to combine the known elements in the claimed. In this regard, the Court held "[t]o facilitate review, this analysis should be made explicit."<sup>3</sup> "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."<sup>4</sup>

In general, and for all the present rejections, Chuah in view of Shimojo at least do not teach or suggest limitations pertaining to the various recitations of a third connection leg supporting flow control on the lower transmission protocol level, and tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control, as variously recited in the pending claims.

### ***Discussion of Applicants' Disclosure***

By way of background, one or more embodiments of Applicants' disclosure are directed to flow control method in a telecommunications system, particularly in wireless telecommunications systems. Flow control information is tunneled over the leg which does not support flow control on a lower transmission protocol layer underlying a user level. The nodes at both ends of the leg are arranged to use the flow control information to control the data flow on the lower transmission protocol level of the leg. In other words, the transmission of new data on the lower transmission protocol level is ended, or the data rate is decreased when the flow

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<sup>1</sup> See MPEP §2143.

<sup>2</sup> *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) and See MPEP §2143.

<sup>3</sup> *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. \_\_\_\_ (2007) (*see* p. 14).

control information activates the flow control in the transmitting node. Similarly, the transmission of new data on the lower transmission protocol level is restarted or the data rate is increased when the conveyed flow control information deactivates the flow control. The need of flow control may be recognized from the receiving buffer status on the lower transmission protocol level or from incoming flow control information received over the following leg of the connection in the downlink direction.

In order to implement flow control, the flow control information may be employed by the user layer protocol entity. The user layer entity may implement the above flow control by controlling the data input from the user layer to the underlying lower transmission protocol layer, and/or by activating the flow control mechanism of the lower transmission protocol layer of the previous leg in the uplink direction, *e.g.*, by mapping or converting the tunneled flow control information into the flow control information according to the protocol of the next leg. In the latter case, the lower layer protocol entity of the previous leg in the same node may stop forwarding new data to a leg not supporting the flow control, and/or the respective lower protocol entity at the far end of the previous leg may stop sending new data. In each case, the data flow on the lower transmission protocol level of the leg not supporting the flow control can be controlled, and the overflow of data buffers or discarding of data can be avoided in each leg of the end-to-end connection. As a result, the integrity of the data can be assured with the lower level flow control mechanisms only, without any need for high-level flow control. Also, large buffers can be avoided. The inventive concept also allows, however, the use of a high-level protocol, such as the LAC, in one of the legs of the connection or over the whole end-to-end connection.

Further, in other aspects of embodiments, flow control information may be tunneled over the leg not supporting the flow control, as in-channel signaling or in out-channel signaling associated with a connection.

In one embodiment, the connection leg not supporting the flow control is an ATM connection, and the lower transmission protocol level includes an ATM adaptation layer. In order to implement the in-channel signaling embodiment, flow control information may be

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<sup>4</sup> See *Id.*, citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

inserted into the ATM adaptation layer service data unit which is then transported over the leg not supporting the flow control to the other end in accordance with an ATM network protocol. At the other end, the flow control information is extracted from the ATM adaptation layer service data unit. The flow control information may be inserted into the user data field of the ATM adaptation layer service data unit. The in-channel signaling approach is a very flexible and simple way to arrange the tunneling of the flow control information. In the out-channel signaling approach, some modification in the signaling messages may be required, depending on the signaling system used.

### ***Discussion of Chuah and its Deficiencies***

According to the Abstract, Chuah is purportedly directed to methods and apparatus for retransmission based access priority in a MAC protocol of a communications system, for example, with respect to UMTS RACH. The invention asserts to introduce several access priority methodologies including: (i) random chip delay access priority (RCDAP); (ii) random backoff based access priority (RBBAP); (iii) variable logical channel based access priority (VLCAP); (iv) UMTS-specific variable logical channel based access priority (VLCAP'); (v) probability based access priority (PBAP); and (vi) retransmission based access priority (REBAP). Each methodology associates some parameter or parameters to access priority classes in order to influence the likelihood of a remote terminal completing a successful access request to a base station.

Chuah merely discloses a conventional UMTS access network and UMTS protocol stacks (see, Figs. 1 and 2). Thus, the LAC/LRC/MAC are used in the radio interface Uu, and LAC/RLC/IP protocols are used in the interface Iub between node B and the radio network controller RNC. ATM (Asynchronous Transfer Mode) may be used in the L2 layer at the interface Iub.

As recognized by the Examiner, the RLC/MAC protocols at the radio interface Uu support flow control, whereas the ATM protocol in layer L2 at the interface Iub does not. Accordingly, ***the radio interface Uu does not correspond to a first connection leg, and interface Iub does not correspond to an intermediate second connection leg as variously recited in the rejected claims.***

The Examiner has incorrectly concluded that the connection leg between another user equipment 4 and another node-B6 in FIG. 1 corresponds with the claimed third connection leg. However, Chuah's leg is also a radio interface Uu *in a totally different subnetwork 18*. Thus, the connection leg between the user equipment 4 and node B6 has *no relationship* to the other two connections. As a result, the Examiner's proposed interpretation of *Chuah fails to teach the variously claimed third connection leg* in combination with the first and second connections.

Further, the Examiner incorrectly asserts that Chuah's node B6, which is located between the radio interface and the link to the RNC, teaches the first network element of the claimed mobile communications system between the first and second legs, and that the other node B6, which has the radio connection with the user equipment 4, establishes the second element of the mobile communication system between the second and third legs as claimed. However, this other node B6 is not located *between* the second leg (which, according to the Examiner's interpretation, is between the first node B6 and the RNC10) and the alleged third connection leg (the second radio connection). The network element 10 to which the alleged second connection leg terminates is RNC10. Thus, *the third connection leg would necessarily be a connection on the other side of the RNC10, which is contrary to the Examiner's contentions*.

As further admitted by the Examiner, Chuah fails to teach or suggest first and second network elements configured to tunnel lower level flow control information through the lower transmission protocol level and the second leg between the first and third legs in order to provide end-to-end flow control and thereby data integrity over the connection on the lower transmission protocol layer. The Examiner relies upon Shimojo at col. 1:12-14 and col. 3:48-57 as allegedly providing this teaching. Applicants respectfully traverse this characterization of the applied art.

#### ***Discussion of Shimojo and its Deficiencies***

According to its Abstract, Shimojo is purportedly directed to a flow control apparatus and flow control method wherein the flow control apparatus is connected to an ATM switch having a plurality of input ports and a plurality of output ports provided among ATM exchanges through transmission links. A buffer is connected to the input port and temporarily stores ATM cells output from the ATM switch, wherein the ATM cells are transmitted through the ATM switch to the output port connected to a next ATM exchange. A controller sets up the ATM switch wherein first-free information cells conveying the free-buffer information of the buffer input to the input port are transmitted to the output port connected to a preceding ATM exchange. The

controller also controls transmission of the ATM cells from the buffer based on second free-buffer information cells transmitted from the next ATM exchange and traffic parameters for guaranteeing transmission quality.

Generally, Shimojo relates to flow control between a pair of devices having an ATM network in between (*i.e., no real first, second, and third legs exist in Shimojo*, as in Applicants' claims). In contrast to Applicants' invention as variously claimed, flow control is provided between a pair of devices at the ends of the first leg, and flow control is also provided between a pair of devices at the ends of the third leg. The flow control information is tunnelled between the devices connecting the first and third legs through a second leg to allow complete, end-to-end flow control. Thus, Shimojo has only one end-to-end segment or leg (between a single pair of devices) from the flow control point of view, whereas in the claimed invention, there are three flow control legs, each between a different pair of devices.

More specifically, the portion of Shimojo at col. 3:48-57 referred to by the Examiner relates to operation of an ATM switch that does not have *any* flow control function. As illustrated in FIG. 2 and disclosed in Shimojo at col. 4, lines 1-10, such a switch merely switches the ATM cells through from an input port to an output port so that there is end-to-end ATM cell traffic (*i.e., effectively a single leg from the flow control point of view*) between the single pair of apparatus having flow control. Thus, all ATM traffic is effectively tunnelled. When there is a plurality of ATM switches on the route, each switch passes the ATM cells through.

Contrary to the Examiner's assertions, *these portions of Shimojo do not teach or suggest a first connection leg supporting a flow control* on a lower transmission protocol level underlying the user level between a first flow control apparatus and a first ATM switch. That is, these devices do not establish a device pair having a flow control therebetween. This first connection leg does not support flow control because the ATM switch does not support flow control towards the first flow control apparatus. Similarly, at the opposite end of the connection, *there is no third connection leg supporting a flow control* on a lower transmission protocol level underlying the user level between a second ATM switch and a second flow control apparatus, *i.e., these devices do not establish a pair having a flow control therebetween*. This third connection leg does not support flow control because the second ATM switch does not support flow control towards the second flow control apparatus in Shimojo. On the intermediate connection leg between the first and second ATM, *there is no flow control either, since neither*

*of the ATM switches support flow control.* Only the end apparatus use and support flow control, *i.e.*, there is effectively only one flow control leg between the two apparatus at the ends of the leg.

### ***Specific Deficiencies of Chuah and Shimojo***

The deficiencies of the combination of Chuah and Shimojo will now be specifically addressed with respect to each rejected independent claim.

#### **Independent claim 23**

The applied art, either alone or in combination, does not teach or suggest a mobile communications system that includes, among other features, “...*a third connection leg supporting flow control on the lower transmission protocol level, a first network element of the mobile communications system between the first and second legs, a second network element of the mobile communications system between the second and third legs, wherein the first and second network elements are configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...*,” as recited in independent claim 23, as previously presented (*emphasis added*).

#### **Independent claim 24**

Further, the applied art, either alone or in combination, does not teach or suggest a network element for a mobile communications system which includes, *inter alia*, “a processor connected between a first connection leg and an intermediate second connection leg, wherein the processor is configured to *relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg, and said intermediate second connection leg connected to a second network element of the mobile communications system relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level*, wherein the second leg does not support flow control on the lower transmission level, *wherein the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control* and thereby data integrity over the connection on the lower transmission protocol layer...,” as recited in independent claim 24, as amended (*emphasis added*).

**Independent claim 27**

Finally, the applied art, either alone or in combination, does not teach or suggest a radio network controller for a mobile communications system, wherein the controller includes, *inter alia*, “a processor...configured to relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg, and ***said intermediate second connection leg connected to a second network element of the mobile communications system relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level***, wherein the second leg does not support flow control on the lower transmission level, ***wherein the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...***,” as recited in independent claim 27, as amended (*emphasis added*).

Accordingly, since the applied art does not teach or suggest all the claimed limitations, reconsideration and allowance of independent claims 23, 24, and 27 are respectfully requested.

***Shimojo “Teaches Away” from the Claimed Invention***

Even if the applied art, either alone or in combination, taught or suggested all the limitations recited in the independent claims (which it does **not**), a person with skill in the art would not have a rational reason to combine Chuah with Shimojo in the manner suggested by the Examiner, because these references teach away from Applicants’ invention as variously recited in the various independent claims. Only through the use of improper hindsight analysis would these references be looked upon to derive Applicant’s novel and non-obvious invention, as claimed in the various independent claims.

***The Examiner mischaracterizes the teachings of Shimojo***, by asserting on page 5 of the Official Action that Shimojo discloses tunnelling flow control information through the lower transmission protocol level at col. 1:12-14 and col. 3:48-57. In fact, Shimojo actually teaches something quite the opposite at col. 3:46 through col. 4:17 and FIG. 2, by disclosing that ATM nodes, which have no flow control function, suffer from severe disadvantages regarding efficient utilization of network resources, and also that tunnelling techniques pose problems, and are



therefore undesirable. *The solutions proposed by Shimojo exclude tunnelling*, and instead use one of two techniques, the so-called “credit method” (see col. 6:57 through col. 7:21) and the so-called “rate-based control” (see col. 7:22 through col. 8:19).

Thus, *Shimojo explicitly teaches away from the variously claimed invention* in at least two aspects by teaching that *each* switch node *must be* provided with a flow control function (apparently to avoid use of tunnelling), *and that Appellants’ variously recited tunnelling function is undesirable* due, at least in part, to an assertion of inefficient bandwidth utilization.

It is impermissible within the framework of 35 U.S.C. §103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.<sup>5</sup> Further in this regard, As the Court of Customs and Patent Appeals, predecessor to the Federal Circuit, has held:

All relevant teachings of cited references must be considered in determining what they fairly teach to one having ordinary skill in the art. The relevant portions of a reference include not only those teachings which would suggest particular aspects of an invention to one having ordinary skill in the art, but also those teachings which would lead such a person away from the claimed invention.<sup>6</sup>

The rejections in the Official Action amount, in substance, to nothing more than hindsight reconstruction of Applicants’ invention by relying on isolated teachings of the applied art, without considering the overall context within which those teachings are presented. Without benefit of Applicants’ disclosure, a person having ordinary skill in the art would not know what portions of [Chuah and Shimojo] to consider, and what portions to disregard as irrelevant or misleading.<sup>7</sup>

Therefore, if a person with skill in the art had applied the teachings of Shimojo in the system of Chuah, they would have necessarily provided each and every intermediate node that did not initially support flow control with a flow control apparatus providing such support, and would have avoided using an “undesirable” (by the teachings of Shimojo) tunnelling technique.

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<sup>5</sup> *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 230 USPQ 416 (Fed. Cir. 1986).

<sup>6</sup> *In re Mercier*, 185 USPQ 774, 778 (CCPA 1975).

<sup>7</sup> *In re Wesslau*, 147 USPQ 391, 393 (CCPA 1965).

Thus, the incorporation of Shimojo's teachings in Chuah's system would result in a system in which *all* intermediate nodes would support L2 flow control such that the system would necessarily exclude *any* legs that would not support L2 flow control. Further, ***Shimojo explicitly teaches away from the use of tunnelling techniques***. Accordingly, a person with skill in the art would not have a rational reason to combine Chuah with Shimojo in the manner suggested by the Examiner, even if the combination of Chuah and Shimojo taught or suggested all the claim limitations, which it does not. Applicants submit that there is no rational reason to combine the art, particularly because Shimojo teaches away from the combination suggested by the Examiner. Therefore, the rejections should be withdrawn on this additional basis.

#### **Unpatentability Rejection over Chuah in View of Shimojo and Edholm**

Withdrawal of the rejection of claims 1, 14 and 28 under 35 U.S.C. §103(a) as allegedly being unpatentable over Chuah in view of Shimojo and Edholm (US 6,600,721) is requested. The Examiner has failed to make a *prima facie* case of unpatentability. The legal requirements for unpatentability have been previously discussed. Chuah and Shimojo have also previously been discussed.

#### ***Discussion of Edholm and its Deficiencies***

According to its Abstract, Edholm is purportedly directed to end node pacing for Quality of Service (QOS) and bandwidth management, wherein a system of pacing data between a network and an end node is described. The system determines a threshold bandwidth based on the receiving capabilities of a client device. A control circuit monitors the flow of data and adjusts latencies between packets of data to stay within the threshold bandwidth. By maintaining the flow of data within the threshold bandwidth, Edholm asserts that the need for flow control signals and large buffers is minimized.

#### ***Edholm "Teaches Away"***

The Examiner asserts that Edholm teaches the use of "in-band signalling". However, ***Edholm at col. 1:36-44 actually teaches away from the use of Applicants' recited in-band signalling by stating that in-band flow control is inefficient and requires additional hardware to implement***. Thus, Edholm does not teach that for which the Examiner offers it. The law

regarding the use of impermissible hindsight in formulating an unpatentability rejection has been previously discussed.

***Specific Deficiencies of Chuah, Shimojo, and Edholm***

**Independent claim 1**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system which includes, *inter alia*, “transmitting data over a connection comprising a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, ***and a third leg supporting flow control on the lower transmission protocol level, and tunnelling lower level flow control information as in-channel signalling through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer,” as recited in previously-presented independent claim 1 (*emphasis added*).

**Independent claim 14**

Further, the applied art, either alone or in combination, does not teach or suggest a telecommunications system that includes, *inter alia*, “a first connection leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second connection leg not supporting flow control the lower transmission level, ***a third connection leg supporting flow control on the lower transmission protocol level, a first node between the first and second legs, a second node between the second and third legs, wherein the first and second nodes are arranged to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...wherein ***the first and second nodes are arranged to tunnel said flow control information in in-channel signalling over the second leg***,” as recited in previously-presented independent claim 14 (*emphasis added*).

**Independent claim 28**

Finally, the applied art, either alone or in combination, does not teach or suggest a network node for a telecommunications system wherein the network node includes, *inter alia*, “a

processor connected between a first connection leg and an intermediate second connection leg, ***wherein the processor is configured to relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg***, and said intermediate second connection leg connected to a second network node relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level, wherein the second leg does not support flow control on the lower transmission level, ***wherein the processor is configured to tunnel lower level flow control information as in-channel signaling through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer,” as recited in previously-presented independent claim 28 (*emphasis added*).

Accordingly, since the applied art does not teach or suggest all the claimed limitations, reconsideration and allowance of independent claims 1, 14, and 28 are respectfully requested. Furthermore, dependent claims 3, 4, and 6 depend from patentable claim 1, and are submitted as being allowable at least on that basis, without further recourse to the patentable features recited therein.

Finally, as discussed above, ***Edholm teaches away from Applicants’ claimed invention by teaching that in-band flow control is inefficient and requires additional hardware to implement***. Thus, Applicants submit that the rejections should be withdrawn on this additional basis.

#### **Unpatentability Rejection over Chuah in View of Shimojo, Edholm, and Akiyoshi**

Withdrawal of the rejection of claims 3, 4 and 6 under 35 U.S.C. §103(a) as allegedly being unpatentable over previously-cited Chuah, Shimojo, and Edholm in view of Akiyoshi (US 5,668,812) is requested. The Examiner has failed to make a *prima facie* case of unpatentability. The legal requirements for unpatentability have been previously discussed. Chuah, Shimojo, and Edholm have also been discussed above.

### ***Discussion of Akiyoshi and its Deficiencies***

According to its Abstract, Akiyoshi is purportedly directed to an apparatus for detecting and controlling loss of ATM cell in which an ATM switching system has a receiving unit for receiving an ATM cell, reassembling it into a frame and temporarily storing a buffer memory with this frame. When the receiving unit receives the cell, discrimination is made as to whether the cell is a continuous in-receipt cell or a last cell. A cell-to-cell receiving time or a receiving time between a head cell and the last cell is monitored. When this receiving time exceeds a set time, a determination is that the cell loss is detected. Invalid holding of a buffer memory is restrained by releasing the buffer memory.

The Examiner asserts that Akiyoshi teaches the use of an ATM adaption layer. Whether or not that is true, Akiyoshi does not make up for the previously-identified deficiencies of Chuah, Shimojo, and Edholm with respect to the rejection of claim 1 from which claims 3, 4, and 6 depend.

Accordingly, since the applied art does not teach or suggest all the limitations of independent claim 1, claims 3, 4, and 6 are submitted as being allowable at least on that basis, without further recourse to the patentable features recited therein.

### **Unpatentability Rejection over Chuah in View of Shimojo, Williams, and Akiyoshi**

Withdrawal of the rejection of claims 7, 18 and 29 under 35 U.S.C. §103(a) as allegedly being unpatentable over Chuah, Shimojo, Williams (US 6,317,455), and Akiyoshi is requested. The Examiner has failed to make a *prima facie* case of unpatentability. The legal requirements for unpatentability have been previously discussed. Chuah, Shimojo, and Akiyoshi have also been discussed above.

### ***Discussion of Williams and its Deficiencies***

According to its Abstract, Williams is purportedly directed to a system and method for user information transfer before modem connection in which high-speed modems are asserted as being made more efficient, particularly for transaction and Internet applications, by providing for transmission of pre-connection user data during modem training. A training sequence for a modem in accordance with the invention may be summarized as follows: beginning training of the modem

at a first data rate using a defined training sequence; after a selected amount of training, transmitting pre-connection user data from the modem at up to the first data rate while continuing training of the modem; ending training; and enabling transmission of user data at a full connected data rate of the modem. The invention may also include the following training sequence before enabling transmission of user data at the full connected data rate of the modem: beginning secondary training of the modem at a second data rate using a defined training sequence; after a selected amount of secondary training, transmitting pre-connection user data from the modem at up to the second data rate while continuing secondary training of the modem; and ending secondary training.

The Examiner admits that the combination of Chuah, Shimojo, and Akiyoshi is silent with respect to providing a teaching or suggestion of out-of-traffic-channel signaling associated with the connection, and asserts that Williams makes up for this deficiency. It appears that the Examiner has found a reference that merely mentions “out-of-channel” signaling, without regard to the particular purpose or implementation of such signaling.

Whether or not Williams discloses that for which the Examiner offers it, Williams does not make up for the previously-identified deficiencies of Chuah and Shimojo with respect to the rejection of independent claims 1, 14, 23, 24, etc., similar in some respects to independent claims 7, 18, and 29.

***Specific Deficiencies of Chuah, Shimojo, Williams, and Akiyoshi***

**Independent Claim 7**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system that includes, *inter alia*, “transmitting data over a connection comprising ***a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level***, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, ***and tunnelling said flow control information over the second leg in an out-of-traffic-channel signalling associated with a connection***,” as recited in previously-presented independent claim 7 (*emphasis added*).

### **Independent Claim 18**

The applied art, either alone or in combination, does not teach or suggest a telecommunications system that includes, *inter alia*, “a first connection leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second connection leg not supporting flow control the lower transmission level, ***a third connection leg supporting flow control on the lower transmission protocol level, a first node between the first and second legs, a second node between the second and third legs, wherein the first and second nodes are arranged to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...on the lower transmission protocol layer, and wherein the first and second nodes are arranged to tunnel said flow control information in out-of-traffic-channel signalling over the second leg,***” as recited in previously-presented independent claim 18 (*emphasis added*).

### **Independent Claim 29**

Finally, the applied art, either alone or in combination, does not teach or suggest a network node for a telecommunications system which includes, *inter alia*, “a processor connected between a first connection leg and an intermediate second connection leg, ***wherein the processor is configured to relay communication between a first connection leg supporting flow control on a lower transmission protocol level underlying a user level a first connection leg, and said intermediate second connection leg connected to a second network node relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level,*** wherein the second leg does not support flow control on the lower transmission level, ***wherein the processor is configured to tunnel lower level flow control information in an out-of-traffic-channel signalling associated with a connection through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...over the connection on the lower transmission protocol layer,***” as recited in currently-amended independent claim 29 (*emphasis added*).

**Unpatentability Rejection over Chuah in View of Shimojo, Akiyoshi, and Edholm**

Withdrawal of the rejection of claims 8-12, 19, 21, 25 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over Chuah in view of Shimojo, Akiyoshi, and Edholm is requested. The Examiner has failed to make a *prima facie* case of unpatentability. The legal requirements for unpatentability have been previously discussed. Chuah, Shimojo, Akiyoshi, and Edholm have been discussed above.

***Specific Deficiencies of the Combination***

**Independent Claim 8**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system which includes, *inter alia*, “***transmitting data over a connection comprising a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level***, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, ***tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer, ***said tunneling further comprising recognizing at a first node between the first and second legs a need to start a flow control towards the second leg, sending a flow control ON request over the second leg, receiving the flow control ON request at a second node between the second and third legs***, stopping sending new data or decreasing data rate from the second node to the first node over the second leg in response to the flow control ON request,” as recited in previously-presented independent claim 8 (*emphasis added*).

**Independent Claim 10**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system that includes, *inter alia*, “***transmitting data over a connection comprising a first leg supporting flow control on a lower transmission***



*protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level*, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, *tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control*...over the connection on the lower transmission protocol layer, *said tunneling further comprising recognizing at a first node between the first and second legs a need to start flow control towards the second leg, sending a flow control ON request over the second leg, receiving the flow control ON request at a second node between the second and third legs, activating in the second node flow control towards the third leg in response to the flow control ON request*,” as recited in previously-presented independent claim 10 (*emphasis added*).

#### **Independent Claim 11**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system which includes, *inter alia*, “*transmitting data over a connection comprising a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level*, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, *tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control*...over the connection on the lower transmission protocol layer, *said tunneling further comprising recognizing at the first node a need of stopping the flow control towards the second leg*, sending a flow control OFF request over the second leg, receiving the flow control OFF request at the second node, *deactivating in the second node flow control towards the third leg in response to the flow control ON request*”, as recited in previously-presented independent claim 11 (*emphasis added*).

### **Independent Claim 12**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system which includes, *inter alia*, “***transmitting data over a connection comprising a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level***, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, ***tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer, ***said tunneling further comprising recognizing the need for starting or stopping the flow being based on the status of a receiving or transmitting buffer in the first node or on incoming flow control information received over the first leg***”, as recited in previously-presented independent claim 12 (*emphasis added*).

### **Independent Claim 19**

The applied art, either alone or in combination, does not teach or suggest a telecommunications system which includes, *inter alia*, “...an intermediate second connection leg not supporting flow control on the lower transmission level, ***a third connection leg supporting flow control on the lower transmission protocol level...a second node between the second and third legs, wherein the first and second nodes are arranged to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer, and ***wherein the first and second nodes are arranged to recognize a need to start or stop flow control towards the second leg and to send a flow control ON request or a low control OFF request, respectively, over the second leg, and the first and second peer entities are responsive to receiving the flow control ON request or the flow control OFF request for stopping or starting, respectively, the sending, or decreasing and increasing data rate, respectively, of data towards the second leg***,” as recited in previously-presented independent claim 19 (*emphasis added*).

### **Independent Claim 21**

The applied art, either alone or in combination, does not teach or suggest a telecommunications system which includes, *inter alia*, “...an intermediate second connection leg not supporting flow control the lower transmission level, ***a third connection leg supporting flow control on the lower transmission protocol level...a second node between the second and third legs, wherein the first and second nodes are arranged to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...***over the connection on the lower transmission protocol layer, and ***wherein the recognition of the need for starting or stopping the flow based on the status of a receiving or transmitting buffer in the nodes or on incoming flow control information received over the first or the third leg,***” as recited in previously-presented independent claim 21 (*emphasis added*).

### **Independent Claim 25**

The applied art, either alone or in combination, does not teach or suggest a network node for a telecommunications system which includes, *inter alia*, “...a processor connected between a first connection leg and an intermediate second connection leg, wherein the processor is configured to relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg, and ***said intermediate second connection leg connected to a second network node relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level,*** wherein the second leg does not support flow control on the lower transmission level, ***wherein the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control...***over the connection on the lower transmission protocol layer, ***the processor is configured to recognize a need to start or stop flow control towards the second leg and to send a flow control ON request or a low control OFF request, respectively, over the second leg, and the processor is responsive to receiving a flow control ON request or a flow control OFF request for stopping or starting, respectively, the sending, or decreasing and increasing data rate, respectively, of data towards the second leg,***” as recited in previously-presented independent claim 25 (*emphasis added*).

### **Independent Claim 26**

Finally, the applied art, either alone or in combination, does not teach or suggest a network node for a telecommunications system which includes, *inter alia*, “a processor... configured to relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg, and ***said intermediate second connection leg connected to a second network node relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level***, wherein the second leg does not support flow control on the lower transmission level, ***wherein the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer, and ***wherein the recognition of the need for starting or stopping the flow is based on the status of a receiving or transmitting buffer in telecommunication system nodes or on incoming flow control information received over the first or the third leg***,” as recited in previously-presented independent claim 26 (*emphasis added*).

Accordingly, since the applied art does not teach or suggest all the limitations of independent claims 8, 10-12, 19, 21, 25 and 26, withdrawal of the rejection and allowance of these claims are respectfully requested. In addition, dependent claim 9 depends from patentable claim 8, and is submitted as being allowable at least on that basis, without further recourse to the patentable features recited therein.

### **Unpatentability Rejection over Chuah in View of Shimojo and Akiyoshi**

Withdrawal of the rejection of claims 5 and 30 under 35 U.S.C. §103(a) as allegedly being unpatentable over Chuah in view of Shimojo and Akiyoshi is requested. The Examiner has failed to make a *prima facie* case of unpatentability. The legal requirements for unpatentability have been previously discussed. Chuah, Shimojo, and Akiyoshi have also been discussed above.

### ***Specific Deficiencies of the Combination***

#### **Independent Claim 5**

The applied art, either alone or in combination, does not teach or suggest a data transmission method in a telecommunications system which includes, *inter alia*, “***transmitting data over a connection comprising a first leg supporting flow control on a lower transmission protocol level underlying a user level, an intermediate second leg not supporting flow control on the lower transmission level, and a third leg supporting flow control on the lower transmission protocol level***, wherein said second leg comprises an ATM connection, and said lower transmission protocol level includes an ATM adaptation layer, ***tunnelling lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in order to provide end-to-end flow control***...over the connection on the lower transmission protocol layer, ***said tunneling further comprising encapsulating the flow control information in an ATM adaptation layer service data in one of the following ways: inserting an octet carrying the flow control information before a first user data octet in a payload field of the ATM adaptation layer service data unit, inserting a bit or bits carrying the flow control information before first user data bits in a payload field of the ATM adaptation layer service data unit, inserting an octet or a bit or bits carrying the flow control information in the ATM adaptation layer service data unit as the only payload information in the payload field, or inserting an octet or a bit or bits carrying the flow control information with a limited amount of user data in the payload of the ATM adaptation layer service data unit, transporting the ATM adaptation layer service data unit to the other end of the second leg in accordance with an ATM network protocol, and extracting the flow control information from the ATM adaptation layer service data unit at said other end of the second leg***,” as recited in previously-presented independent claim 5 (*emphasis added*).

Applicants note that the Examiner has ignored the recitations in the statement of the rejection relating to “***said tunneling further comprising encapsulating the flow control information in an ATM adaptation layer service data in one of the following ways....***” There is no allegation by the Examiner that the suggested combination teaches or suggests these ways of further carrying out tunneling, and thus it appears that the Examiner has improperly ignored these limitations.

### **Independent Claim 30**

Finally, the applied art, either alone or in combination, does not teach or suggest a network node for a telecommunications system which includes, inter alia, ***“a processor... configured to relay communication between said first connection leg supporting flow control on a lower transmission protocol level underlying a user level on said first connection leg, and said intermediate second connection leg connected to a second network node relaying the communication further to and from a third connection leg supporting flow control on the lower transmission protocol level, wherein the second leg does not support flow control on the lower transmission level, wherein the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in one of the following alternative ways: inserting an octet carrying the flow control information before a first user data octet in a payload field of the ATM adaptation layer service data unit, inserting a bit or bits carrying the flow control information before first user data bits in a payload field of the ATM adaptation layer service data unit, inserting an octet or a bit or bits carrying the flow control information in the ATM adaptation layer service data unit as the only payload information in the payload field, or inserting an octet or a bit or bits carrying the flow control information with a limited amount of user data in the payload of the ATM adaptation layer service data unit,”*** as recited in currently-amended independent claim 30 (*emphasis added*).

Applicants again note that the Examiner has ignored the recitations in the statement of the rejection relating to ***“the processor is configured to tunnel lower level flow control information through the lower transmission protocol level of the second leg between said first and third legs in one of the following alternative ways...”*** There is no allegation by the Examiner that the suggested combination teaches or suggests these ways of further carrying out tunneling, and thus it appears that the Examiner has improperly ignored these limitations.

Accordingly, since the applied art does not teach or suggest all the claimed limitations, reconsideration and allowance of independent claims 5 and 30 are respectfully requested.

**Conclusion**

All rejections having been addressed, Applicant submits that each of pending claims 1, 3-12, 14, 18, 19, 21, 23-30 in the present application is in immediate condition for allowance. An early indication of the same would be appreciated. The Examiner is again urged to withdraw the rejections, and to pass the application to issue.

In the event the Examiner believes that an interview would be helpful in resolving any outstanding issues in this case, the Undersigned Attorney is available at the telephone number indicated below.

For any fees that are due, including fees for extensions of time, please charge Deposit Account Number 03-3975 from which the Undersigned Attorney is authorized to draw. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Date: February 20, 2008

Respectfully submitted,

**Electronic Signature:** /Larry J. Hume/

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Attachment: 2-Month Extension of Time